

**ATTACHMENT VII**

**COMMENTS AND RESPONSES ON THE  
DRAFT MODELING PROTOCOL IN SUPPORT OF  
A FIVE PERCENT PLAN FOR PM-10  
FOR THE MARICOPA COUNTY NONATTAINMENT AREA,  
PREPARED BY THE MARICOPA ASSOCIATION OF GOVERNMENTS,  
JULY 10, 2006**

COMMENTS FROM SCOTT BOHNING, EPA REGION 9 (E-mail dated August 29, 2006)

Comment: 2.2.1 Modeling Inventories - In the SIP submittal, it would be desirable to have maps showing the spatial surrogates used to apportion emissions into the modeling grid squares, and/or emission density plots for important source categories. Also, for peak modeling concentration and for other local maxima, it would be desirable to show the percent contribution from each modeled source category.

Response: The following text has been added to the protocol document: Maps showing the spatial surrogates used to apportion emissions into the modeling grids and emission density plots of significant source categories will be included in the Technical Support Document. The percent contribution from each modeled source category will also be provided for the peak modeling concentrations.

Comment: 2.3 Meteorological data - Since AERMOD can use only one meteorological station at a time, exactly which station will be used, or else what is the procedure for choosing?

Response: The following text has been added to the protocol document: The choice of meteorological data to be used to model the Salt River Area will take into consideration the availability and accuracy of meteorological data for December 11-13, 2005; meteorology at the monitors with the highest PM-10 concentrations during this period (i.e., West 43<sup>rd</sup> Avenue and Durango Complex); and the wind speeds and directions that best simulate the transport of emissions during the modeled event. The PM-10 Source Attribution Study will also provide insights as to the appropriate meteorology to be used as inputs to AERMOD.

Comment: 2.4 Modeling domains - Section number should be 2.4, not 2.3.

Response: This correction has been made.

Comment: 2.4 Modeling domains - It is not clear whether you are relying on idea that the selected modeling domains are representative of other locations in the Maricopa nonattainment, as opposed to just focusing on subareas currently above the NAAQS, for their own sake.

Response: The following text has been added to the protocol document: Due to the diversity and number of PM-10 sources in the Salt River Area, this area is considered to be a worst-case representation of sources throughout the nonattainment area.

Comment: 2.4 Modeling domains - You should repeat ADEQ's original rationale for SRSA domain choice (basically that it covers the main exceedance and emitting areas contributing to those).

Response: The following text has been added to the protocol document: This area has the highest density of PM-10 emissions in the nonattainment area. In addition, all major sources of PM-10 emissions, except unpaved roads, are represented in the area. These sources include: light and heavy dust-generating industries, active agricultural land, active construction sites, vacant lots, and unpaved parking areas. The area also includes four monitors, two of which typically record the highest PM-10 concentrations in the nonattainment area.

Comment: 2.4 Modeling domains - ADEQ used 400 m grids, which seems rather coarse given the small overall domain; you should consider a smaller size for greater resolution.

Response: The following text has been added to the protocol document: While ADEQ used 400 m grids to model the Salt River Study Area, MAG will consider using a smaller size if the MAG PM-10 Source Attribution and Deposition Study recommends this adjustment. The Study will update the PM-10 emissions inventory for the area and perform additional meteorological and particulate matter monitoring during the fall of 2006. A recommendation to reduce the grid size for AERMOD modeling could result from the emissions inventory update and saturation monitoring.

Comment: 2.4 Modeling domains - The protocol states that Greenwood and West Phoenix will be assumed to attain if Durango and West 43rd do, since the latter have higher concentrations. This argument should be bolstered, as it would seem easy to challenge the assumption as not being enough for an attainment demonstration. You should consider the most direct way to meet this criticism, which would be to extend the domain north to include Greenwood and West Phoenix. I understand that this would add to the expense, and that those sites have only a few exceedances. But absent a larger domain, there would have to be a fairly strong argument about source mix near those monitors being similar to that within the SRSA, or some other assurance that region-wide controls will in fact address the exceedances at those monitors.

Response: The following text has been added to the protocol document: Preliminary analyses of monitoring data from the Durango and West Phoenix sites during January and February 2006 indicate that the ratio of PM-2.5 to PM-10 at these two continuous monitors remains relatively constant over the day. This suggests that the high readings at these two monitors are attributable to similar sources. The MAG PM-10 Source Attribution and Deposition Study will confirm this finding through saturation monitoring during November and December 2006. The Technical Support Document will describe the source mix around the Greenwood and West Phoenix monitors and will demonstrate that regionally implemented control measures will eliminate the small number of exceedances at these two monitors north of the Salt River Area. The TSD will provide convincing evidence that attainment of the PM-10 standard within the Salt River Area will also result in attainment at the Greenwood and West Phoenix monitors.

Comment: 2.4 Modeling domains - The protocol states that the rollback areas may be expanded; how would one know if larger rollback areas are needed?

Response: The following text has been added to the protocol document: Prior studies performed by ADEQ and Clark County, Nevada, will be examined to determine the distance of influence for PM-10 sources. In addition, field work being performed by the MAG PM-10 Source Attribution and Deposition Study will provide additional insights into PM-10 deposition rates in the nonattainment area. The size of the modeling domain for the Higley monitor may be increased if these studies and/or aerial and satellite imagery and meteorological data indicate that there are significant contributing sources outside of the 2 km x 2 km modeling area.

Comment: 2.4 Modeling domains - You might note that the single exceedances for the Buckeye and Higley bolster the argument that their cause is local, and so that rollback over a small domain is OK.

Response: The following text has been added to the protocol document: There is significant acreage of vacant disturbed land adjacent to the Higley monitor that is likely to be the primary source of PM-10 emissions that caused the single exceedance at this monitor.

Comment: 2.5 Design day selection - How is it possible to have 16 exceedances on the same day at Durango and West 43rd? (Or am I misreading this?)

Response: The text in the protocol document has been changed as follows: Sixteen of the exceedances at Durango and West 43<sup>rd</sup> occurred on the same day.

Comment: 2.6 Ambient Monitoring Data - It would be good to have some details, or at least an overall description, of how background values will be calculated, and how they will be handled in the attainment demonstration. How local modeled impacts are separated from the urban component and the pristine natural background could have a big effect on how easy it is to show attainment. (See e.g. ADEQ's direction-specific and seasonal average approaches in Salt River and Yuma plans for some ideas.)

Response: The following text has been added to the protocol document: Saturation monitoring to be performed as part of the MAG PM-10 Source Attribution and Deposition Study during the fall of 2006 will assist in quantifying the contribution of the urban transport component to PM-10 concentrations in the Salt River Study Area. Monitoring data from pristine locations such as Organ Pipe National Monument will be utilized to identify the rural background component of the PM-10 transported into the area.

Comment: ATTACHMENT II Model domain selection - 1.6.2 Rollback Modeling Domains A2-23 - It would be good to cite previous ADEQ/Clark County modeling work showing distance of influence of sources; that could provide some justification for the rather small 2 km domain size. A small domain is also justifiable if emissions are spatially uniform, or if relative contributions of source categories remain about the same when domain is expanded; i.e. mix of sources is constant over an area significantly larger than the domain. It would be good to have something explicit on source mix over the

larger area. From satellite photographs, it seems pretty clear that Buckeye area is uniform, agricultural sources. The Higley photo is less clear but seems to show a relatively constant proportion of agricultural land and developed area.

Response: The following text has been added to the protocol document and Attachment II: Prior studies performed by ADEQ and Clark County, Nevada, will be examined to determine the distance of influence for PM-10 sources. In addition, field work being performed by the MAG PM-10 Source Attribution and Deposition Study in the fall of 2006 will provide additional insights into PM-10 deposition rates in the nonattainment area. The size of the modeling domain for the Higley monitor may be increased if these studies and/or aerial and satellite imagery and meteorological data indicate that there are significant contributing sources outside of the 2 km x 2 km modeling area.

COMMENTS FROM PETER HYDE, ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY, (Letter dated September 5, 2006)

Comment: 1. PM<sub>10</sub> from Outside the Salt River Study Area - Two lines of experimental evidence, as well as anecdotal observations and the general failure to meet PM<sub>10</sub> standards in the Salt River Study Area despite enhanced dust-control regulations and compliance efforts, suggest that an appreciable fraction of elevated PM<sub>10</sub> concentrations originates from outside the area. Speciated fine and coarse PM concentrations have been analyzed to calculate the percentage of “foreign” PM. This would appear to be about 45%. The calculations are explained in the first table, and are presented in the second.

The calculations follow the IMPROVE method, in which species are given operative definitions. These are followed by the definitions for “% foreign fine”, % foreign coarse”, and “% foreign PM<sub>10</sub>”, which are based on monitoring arguments.

Species or %	Equation	Assumption or Explanation
Sulfate (SO <sub>4</sub> )	$4.125[S]$	All elemental sulfur (S) is from sulfate, which is all ammonium sulfate.
Nitrate (NO <sub>3</sub> )	$1.29[NO_3]$	All nitrate is ammonium nitrate.
Elemental Carbon (EC)	$1.0[EC]$	All high temperature carbon is elemental.
Organic Carbon (OC)	$1.4[OC]$	Average organic molecule is 70% carbon.
Soil	$2.2[Al] + 2.19[Si] + 1.63[Ca] + 2.42[Fe] + 1.94[Ti]$	Soil accounts for the assumed molecular formulas for oxides, with corrections for MgO, Na <sub>2</sub> O, water, and carbonate.
Reconstructed Mass (RCM)	$[SO_4] + [NO_3] + [EC] + [OC] + [Soil]$	Reconstructed mass is the sum of SO <sub>4</sub> , NO <sub>3</sub> , EC, OC, and Soil
Secondary PM (second)	$Second = [SO_4] + [NO_3] + 0.30 * [OC]$	
Primary Carbon (prim OCEC)	$Prim\ OCEC = [EC] + 0.70 * [OC]$	
% Foreign Fine	$\% \text{ second} + \% \text{ primOCEC} + 0.10 * [Soil]$	
% Foreign Coarse	$\% \text{ second} + \% \text{ primOCEC} + 0.254 * [Soil]$	
% Foreign PM <sub>10</sub>	$([PM_{coarse}] * \% \text{ foreign coarse} + [PM_{fine}] * \% \text{ foreign fine}) / ([PM_{fine}] + [PM_{coarse}])$	

The goal here is to estimate what fraction of PM<sub>10</sub> in PM<sub>10</sub> the Salt River Study Area comes from outside the area. The value of % foreign PM<sub>10</sub> is the percentage of ambient PM in the Salt Area from outside the area. The assumptions behind this calculation are that:

1. All sulfate, all nitrate, and 30% of organic carbon are secondary and come from outside the area.
2. All elemental carbon and 70% of organic carbon are primary and come from outside the area.
3. 90% of the fine soil comes from outside the area.
4. 25.4% of coarse soil comes from outside the area. This percentage is the ratio of PM<sub>coarse</sub> during the study period between WF and Organ Pipe.

The table below presents the results of these calculations.

Site	n	Size	RCM (ug/m3)	Second (ug/m3)	% Second Percent	% Soil Percent	% Prim OCEC Percent	RCM/Mass Percent	%Foreign Percent
Salt	16	10	43.77	4.76	12.15	82.15	5.70	76.97	<b>44.08</b>
Salt	16	C	37.34	2.35	6.50	91.70	1.80	99.39	31.59
Salt	16	F	9.13	2.56	31.20	48.38	20.42	41.28	95.16
West 43 <sup>rd</sup>	17	10	35.33	4.25	12.71	81.63	5.66	71.99	<b>46.27</b>
West 43 <sup>rd</sup>	17	C	29.59	2.13	7.40	90.36	2.24	89.93	32.59
West 43 <sup>rd</sup>	17	F	8.39	2.20	28.67	54.74	16.59	44.05	94.53
Supersite	6	10	17.86	2.92	17.02	77.29	5.69	64.82	35.96
Supersite	6	C	15.02	1.44	9.75	88.29	1.96	96.11	20.54
Supersite	6	F	3.82	1.65	45.56	34.61	19.83	30.05	96.54

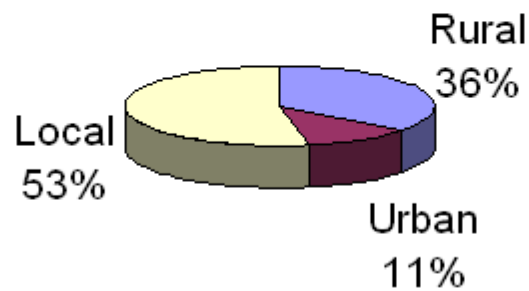
The second line of evidence, described in the “Technical Support Document for the Revised PM<sub>10</sub> State Implementation Plan for the Salt River Area”, June 2005, page 5-24, is based on continuous PM<sub>10</sub> monitoring at West 43<sup>rd</sup> Ave and at two sites east and west of the study area. The percentage of “boundary” PM<sub>10</sub> from this work is about 50% (46.9 to 50.8% for four design dates), in agreement with the “foreign” PM estimated from the speciated measurements.

Both of these methods have their weaknesses, chiefly in their small sample sizes and in the various assumptions built into the speciation calculations. Nonetheless, they represent our best guess at present of how much of the Salt River PM<sub>10</sub> comes from outside the area

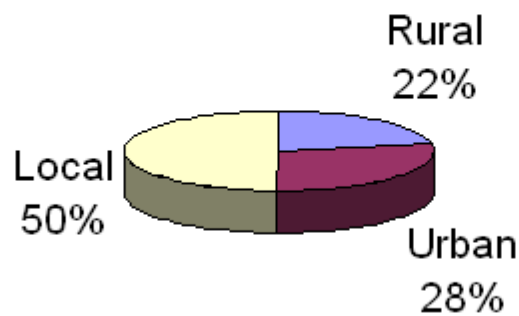
Yet another facet of these “boundary” and “foreign” contributions needs to be understood. Not all of this PM<sub>10</sub> comes from the metropolitan Phoenix area; a considerable portion is actually “rural background”. Page 6-5 of the above-cited technical support document gives the details for three 2002 design dates: the rural background contribution varies from 31 to 76% of the “boundary” or “foreign” PM<sub>10</sub> concentrations. The division of PM<sub>10</sub> measured in the Salt River Study Area into

concentrations from local emissions, from urban transport, and from rural background is shown in the figures below. Note that under high wind conditions, the rural contribution is considerably higher than under low wind conditions, consistent with widespread elevated dust levels in a regional wind storm. The protocol needs to describe how the rural background and boundary concentrations will be determined.

**PM on Two High Wind Days: Local, Urban, Rural**



**PM on Two Low Wind Days: Local, Urban, Rural**





If these estimates are taken at their face value, then any modeling analyses of the area, based primarily on dispersion model estimates of the study area emissions, ought to include some means to account for both the rural background and the influx of urban emissions. The only two ways to accomplish this are with a regional, grid-based model or with independent calculations, such as those above, based on monitoring. The protocol should address this issue and explain how this will be done.

Response: We appreciate the time and effort that ADEQ has expended to analyze the PM-10 problem in the Salt River Area. The information provided by ADEQ, along with monitoring to be performed in the fall of 2006 for the MAG PM-10 Source Attribution and Deposition Study, will be useful in quantifying the rural background, urban transport, and local components of PM-10 that will be used in modeling attainment in the Salt River Study Area.

Comment: 2. A Single Day for AERMOD Analysis - While the December 12, 2005, date is an excellent one, there's no reason to believe that the precise wind and vertical ventilation patterns on this date took place on all the other exceedance days. More design dates are needed to assure that the specific controls envisioned and modeled would be equally effective in achieving 2009 compliance in a variety of wind regimes. One way to select these days would be to generate hourly pollution roses for each site and date. A single date from each group of two or more design dates with similar pollution rose patterns should be modeled.

Response: The protocol now proposes that a three day period, December 11-13, 2005, be modeled with AERMOD in the Salt River Study Area. The West 43<sup>rd</sup> Avenue and Durango Complex monitors exceeded the standard on both December 12 and 13 during this period.

Comment: 3. High Wind PM<sub>10</sub> Modeling - Attempts to model high-wind PM<sub>10</sub> concentrations by ADEQ have not been particularly fruitful. There are several reasons for this, but, chief among them is the lack of a sufficiently time-resolved emissions model that faithfully tracks the episodic suspension of dust in the turbulent conditions of high and gusty winds throughout the duration of the high-wind event. The weakness of the emissions model is coupled with the limited resolution of the satellite-image based methods of assigning different erodibilities to different types of land surface. Attempts to simulate concentrations of PM<sub>10</sub> measured during high winds in the Salt River Study Area and in Yuma have not been successful. This kind of modeling is a sink hole for unproductive work without a firm experimental or theoretical basis to describe the phenomenon. I wish I had some answers for this one, but, the only one I know of would be to close your eyes and use the model in a relative sense. This promises to be a grand headache.

Response: Since the March 10, 2006 has been eliminated due to its classification as a natural event, the only high wind event that is being proposed for modeling is January 24, 2006 at the Higley monitor. The protocol proposes that this event be modeled with rollback, which will significantly reduce the effort required when compared with application of AERMOD.

Comment: 4. Annual PM<sub>10</sub> Standard - I found no mention of the annual standard in the protocol. The figure below would suggest that some attention is needed along these lines: only 10 of the 40 monitoring years have met the standard.

Response: EPA revoked the annual PM-10 standard on September 21, 2006. (<http://epa.gov/pm/standards.html>).

Comment: 5. Control Evaluation - Care needs to be exercised here because the rural contribution is largely constant and cannot be reduced. The urban-wide reductions would apply to the urban transport contributions (11 to 28% of the total). Salt River area reductions, which may be proportionally greater than the urban, at least for the industrial and street sweeping sectors, would be calculated separately for input into AERMOD but would be consistent with any urban-wide regulatory strengthening. The protocol should describe how prospective controls will be evaluated to account for the constant rural contribution, the urban transport contribution, and the local Salt River area emissions contribution.

Response: The Technical Support Document for the Five Percent Plan will detail how prospective control measures are evaluated relative to the rural background, urban transport and local Salt River area emissions.

COMMENTS FROM JO CRUMBAKER, MARICOPA COUNTY AIR QUALITY DEPARTMENT (Letter dated August 29, 2006)

**General comments:**

Comment: The document would benefit from additional detail to standardization throughout the main doc and attachments. (For instance, the same graphic – a map of monitoring sites – appears in the main document and in Attachment II, but with different figure captions.)

Response: Additional effort has been expended to standardize the contents of the document. For example, the titles of the map of monitoring sites in the protocol and Attachment are now identical.

Comment: In several places, the draft document appears to use uncertified (i.e., without QA) monitoring data in its analyses. Maricopa County urges that adequate care be taken to ensure that only certified air quality data (i.e., identical to the data sets provided by MCAQD to EPA/AQS) are used in future analyses undertaken for the Five Percent Plan modeling efforts. Ben Davis, MCAQD Air Monitoring Division Manager, would be happy to provide further details to your staff on how to retrieve this data in the most efficient manner.

Response: The analysis of monitoring data for the modeling protocol began in April 2006 when the data on 2005 and 2006 exceedances were available, but had not been quality assured. All monitoring data were obtained from Ron Pope of the MCAQD Air Monitoring Division. For the Five Percent Plan, certified air quality data from the EPA AQS will be utilized, if it is available. MAG staff has written software to assist in downloading certified air quality data from AQS.

**Specific comments:**

Comment: 1.2 Conceptual Model (p.2) – First para., next to last sentence: Some quantification of the “small fraction” that PM<sub>2.5</sub> comprises on high PM<sub>10</sub> days would strengthen the argument proposed here.

Response: The text in the protocol document has been changed to read: The co-located PM-10 and PM-2.5 monitors at the Durango Complex site indicate that PM-2.5 readings on days with high PM-10 concentrations range from 6 to 15 percent of the PM-10 on high wind days and 14 to 22 percent, on low wind days.

Comment: 1.5 Schedule (p.6) – The references to “M6L[1]ink” should be standardized.

Response: This correction has been made.

Comment: 1.5 Schedule (p.6) – The addition of milestone dates in the text description would facilitate comprehension, so the reader does not have to flip back and forth to the following figure to determine dates, e.g.:

**“July 2006:** 1. Prepare the protocol describing the purpose, background, and procedures to be followed in modeling for the Five Percent Plan for PM<sub>10</sub>.”

Response: This change has been made.

Comment: 1.5 Schedule (p.6) – Figure 1.3 (p.7): The figure caption should read “...PM10”.

Response: This correction has been made.

Comment: Schedule (p.8) – Fourth para., first sentence: add the word “the”: “ A grid-based dispersion model is proposed for application to the area analyzed...”

Response: This correction has been made.

Comment: 2.1.1 AERMOD (p.9) – Fourth para., beginning: “AERMOD has a proven track record..”. The foundation and purpose of this statement are unclear, as the paragraph then goes on to discuss ISCST3.

Response: As the next sentence in the protocol indicates, ISCST3 is the predecessor of AERMOD. That is, AERMOD is the latest version of ISCST3.

Comment: 2.1.1 AERMOD (p.9) – This section discusses at length the importance of the results of the source attribution and deposition study. A sentence describing the planned timetable for this project would be helpful.

Response: The planned timetable for the MAG PM-10 Source Attribution and Deposition Study (i.e., June 2006-May 2007) has been added.

Comment: 2.1.2 Rollback (p.12) – In the next to last sentence of this section, replace the term “major sources” with “significant sources” to increase clarity.

Response: This change has been made.

Comment: 2.2.2 Five Percent Inventories (pp. 13-14) – In the first sentence, replace the phrase “highest monitors” with “monitors with readings that exceed the 24-hr PM-10 NAAQS” or similar wording, to enhance clarity.

Response: This change has been made.

Comment: 2.2.2 Five Percent Inventories (pp. 13-14) – The last paragraph in 2.2.2 states that the onroad mobile source component of the 2009 emission with committed control measures will provide the basis of a new PM-10 conformity budget and includes road construction in the list of PM-10 sources contributing to this budget. Road construction is included in the Periodic Emissions Inventory for PM-10 within the construction area source category????

Response: Transportation conformity requirements indicate that road construction must be included in the conformity budget if the source is deemed to be significant in the emissions inventory. In the Serious Area PM-10 Plan, the source was considered to be significant and this emissions category was included in the conformity budget. The protocol document is assuming

that road construction will continue to be a significant source of PM-10 emissions in the 2005 PM-10 periodic emissions inventory.

Comment: Table 2-2 (pp 15-16) – The present placement of the table is somewhat confusing, as it precedes any discussions in the text.

Response: The text that references the table has been moved to precede the table.

Comment: 2.3 Meteorological Data (p.17) – The document states that upper air sounding data will be obtained from the Tucson Airport. Isn't Phoenix data available?

Response: Upper air sounding data comparable to the Tucson data is not available in Phoenix. However, sodar monitoring of mixing heights will be performed at the West 43<sup>rd</sup> Avenue site as part of the MAG PM-10 Source Attribution and Deposition Study.

Comment: 2.4 Modeling Domains (pp. 17-18) – This section is mis-numbered (as 2.3) in the present draft.

Response: This correction has been made.

Comment: 2.4 Modeling Domains (pp. 17-18) – A reference to Figure 2-4 (map of monitoring sites) early in this section would aid readability.

Response: This change has been made.

Comment: 2.4 Modeling Domains (pp. 17-18) – p.17 There is a disconnect between the first sentence: “The Salt River Study Area is shown in Figure 2-1” and the figure caption.

Response: The title of the figure has been changed.

Comment: 2.4 Modeling Domains (pp. 17-18) – p.18 In the second sentence of this section, replace the term “major sources” with “significant sources” to increase clarity.

Response: This change has been made.

Comment: Design Day Selection – (p.18) The bottom paragraph discusses PM-10 readings at the Durango and West 43<sup>rd</sup> Ave. monitoring sites. The next to last sentence, “Sixteen of these exceedances were recorded...” is unclear as written.

Response: This sentence has been changed to: Sixteen of the exceedances at Durango and West 43<sup>rd</sup> occurred on the same day.

Comment: Design Day Selection – (p.20) Second para., last sentence. The verb “infer” is used here; perhaps “imply” is more precise.

Response: This sentence has been deleted, because it refers to the March 10 exceedance day, which has been eliminated from consideration for modeling because it has been classified as a natural event by ADEQ.

Comment: 2.6 Ambient Monitoring Data (p.21) – Second paragraph. To be consistent with rest of the document ( and most governmental entities), the noun “data” should be treated as plural.

Response: The verbs in this paragraph have been changed.

Comment: Table 2-3 (p.22) – The top row is redundant with the table title, and could be deleted to improve clarity.

Response: This change has been made.

Comment: Figure 2-4 (p.23) – The map includes one Pinal Co. monitoring and should be labeled “PM-10 Monitoring Sites In/near the Maricopa County PM-10 Nonattainment Area as of 12/31/2005.”

Response: This change has been made.

Comment: Figure 2-4 (p.23) – The map could be better scaled to facilitate interpretation of the central-Phoenix area sites; which site names match which symbol are currently unclear.

Response: The draft map has been replaced with one of higher resolution so that the site names are more clearly readable.

Comment: Table 2-4 (p.24) – The table title indicates that the table presents “Design Values for Maricopa County PM-10 Monitors”, but it’s unclear what the remaining columns (2003) through 2006) denote.

Response: Text has been added and the table revised to clarify that the design values are based on the highest PM-10 concentration over the period 2003 through 2005, excluding natural events, where there are at least three years of valid data. Invalid data occurs when less than 75 percent of the monitoring data is recovered in one or more calendar quarters.

Comment: Table 2-4 (p.24) – Units need to identified, in the table title or elsewhere.

Response: Units (i.e., ug/m3) have been added to the title.

Comment: Table 2-4 (p.24) – Why are sites with no data included in the table?

Response: Sites without data did not have a complete year of valid data; these have been deleted from the table.

Comment: Table 2-4 (p.24) – The difference between a blank cell and “N/A” is unclear.

Response: The N/As have been removed from the table.

Comment: Table 2-4 (p.24) – “W.43<sup>rd</sup> Ave.23” contains a typo.

Response: This correction has been made.

Comment: Table 2-4 (p.24) – In general, the nomenclature for site names, location, etc. should be consistent across all tables and figures.

Response: This change has been made.

Comment: Table 2-4 (p.24) – Additional columns indicating the site operator (as in Table 2-3), and a “comments” column listing opening/closing dates where relevant, would improve readability. The Salt River site closed 12/31/2002.

Response: The table has been expanded to include a notes column with opening and closing dates.

Comment: Table 2-4 (p.24) – The 2005 network review has been published; the first para. On p.24 should refer the reader to <http://www.maricopa.gov/aq/status/REVIEW04.pdf>.

Response: This change has been made.

Comment: 3. AERMOD Performance Evaluation (p.25) – Third para., first sentence. Missing period at end of sentence.

Response: This correction has been made.

Comment: 4.2 Identification of Control Measures (p.26) – This section could be strengthened by including some discussion of how the emissions reductions to be achieved by any suggested measure will be estimated.

Response: An additional sentence has been added to indicate that the emission reductions will be based on the latest available information from EPA and other sources (e.g., WRAP Fugitive Dust Handbook).

Comment: References (p.28) – Please update reference [3] to read as follows: 2002 Periodic Emissions Inventory for PM-10 for the Maricopa County, Arizona, Nonattainment Area. Maricopa County Air Quality Department, June 2004 (revised March 2006).

Response: This change has been made.

Comment: APPENDIX A1-A – The 12/12/2005 exceedance at the West Phoenix site ( 155.0 ug/m3) should be included. Note that this was measured on a 1-6 day (one sample every six days) schedule.

Response: This exceedance is not included in Appendix A1-B, because the West Phoenix site is outside the Salt River Study Area and is not being modeled for the Five Percent Plan for PM-10.

Comment: APPENDIX A1-A – Additionally, there was another exceedance (177.6 ug/m<sup>3</sup>) at the West Phoenix site on 4/14/06, measured on a daily (hourly) schedule.

Response: The data reviewed for this protocol included March 2005 through March 2006.

Comment: APPENDIX A1-B – PM-10 Exceedance Days the TEMP and DELT columns have the incorrect units. The proper units are degrees Fahrenheit (F).

Response: This correction has been made.

Comment: ATTACHMENT VI – The page numbering in the Table of Contents should include the prefix “A6-“, to match the page numbering throughout the body of the document.

Response: This correction has been made.

Comment: ATTACHMENT VI – (p.A6-3) – The document states “The frequency of 24-hour PM-10 average exceedances varies among the monitors as shown in Table 1. The West 43<sup>rd</sup> Avenue and Durango Complex sites had the highest number of 24-hour PM-10 exceedances, 13 days, in 2005.” The graph (Table 1) is misleading because prior to 2005 all PM-10 monitoring was done on a 1-6 day schedule. In 2005 all of our most elevated sites were converted to daily schedule (hourly). The EPA multiplies any exceedance measured on a 1-6 day schedule by six. There is no multiplier to exceedances on a daily schedule.

Response: The following text has been added to clarify the table: It is important to note that the exceedances prior to 2005 were recorded at monitors that were sampled once every six days. Therefore, each of these exceedances represents an expected daily exceedance rate that is six times the value shown. All monitors that exceeded the standard in 2005, including West 43<sup>rd</sup> and Durango, have been converted to a daily sampling schedule.

Comment: ATTACHMENT VI – Consider using a graph with two y-axes to better present the data (see following illustrative example).

Response: This change has been made.

Comment: ATTACHMENT I (pp. A1-14 thru A1-16) – An additional note is needed to state the incremented factor or the DELT.

Response: Since the graphs have been changed to the format suggested, the footnote is not needed.

Comment: ATTACHMENT I (pp. A1-14 thru A1-16) – The units of DELT should be in degrees Fahrenheit (F).

Response: This correction has been made.